MISSOURI resources

Fall 2009 • Volume 26 • Number 3

Missouri Department of Natural Resources

35 years

Director's Comment

As crisp autumn leaves fall, most of us begin to turn our thermostats up. But for Missourians living on limited financial resources, this isn't an option. Many choose between heating their homes and feeding their children, or perhaps purchasing prescription medications. Often, these same families find themselves in drafty houses that can't fight off the frigid temperatures of winter that are just around the corner.

This issue of Missouri Resources looks at the Low-Income Weatherization Assistance Program, which helps qualifying homeowners improve the energy efficiency of their homes. The result is significantly lower utility bills for homeowners and homes that are more comfortable for their occupants. The work done at these houses not only assists families in need but also benefits the entire state's economy, and the energy saved protects the natural resources that all Missourians share.

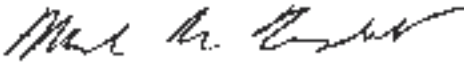
In August, the Department's Energy Center awarded $9,195,704 in weatherization subgrants to community action agencies across Missouri to continue to assist low-income families, particularly the elderly, the physically disadvantaged and families with children. The subgrants are provided by the U.S. Department of Energy and administered by the Energy Center. Through the American Recovery and Reinvestment Act, the federal government's investment in Missouri's weatherization program is expected to total more than $128 million over the next three years.

Just as the cooler temperatures mean warmer homes, they also offer an opportunity to visit our state parks to enjoy the splendor of fall colors. If you're planning an outing, I encourage you to visit Roaring River State Park near Cassville, one of our many fine parks. The Department recently celebrated the opening of a new convenience store at the state park in August. The new expanded store offers a variety of merchandise, including fishing tackle and equipment, souvenir items, groceries and other con-

venience items for campers and visitors. The new store was built by concessionaires Jim and Carmen Rogers in partnership with the Department. The Rogers will operate the store, which will become the property of the Department at the end of their concession contract term.

The store represents a successful public/private partnership and is expected to have a positive impact on the local economy. The Rogers used many local contractors in the store's construction, and hope that its convenient location and expanded grocery store will also make it a convenient option for local residents. The expansion also created jobs for eight area workers.

As the season of Thanksgiving approaches, projects like these remind me to take a moment to express my gratitude to the caring citizens that make these programs possible. I am grateful to those who participate in environmental initiatives and cleanups, the state park volunteers who give their time to help us ensure that our parks are an enjoyable place to visit, the hard-working community action agencies and contractors that make sure every Missourian has a warm place to call home, and countless others that make this state a better place to live.



Mark N. Templeton
Missouri Department of Natural Resources

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Mission Statement
The mission of the Missouri Department of Natural Resources is to protect, preserve and enhance Missouri's natural, cultural and energy resources.

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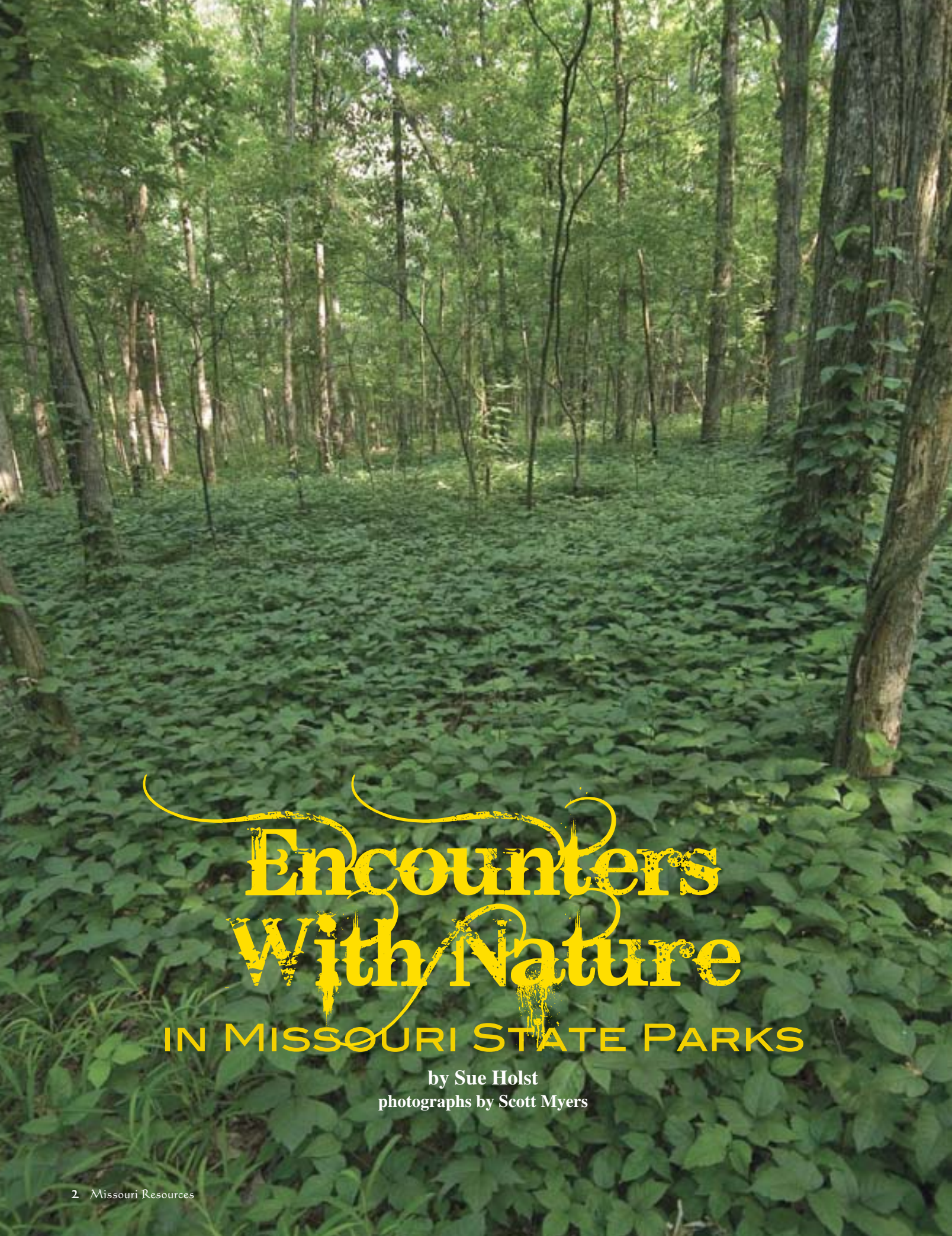
Above right: Diving off cliffs into lakes and streams may be considered fun but it is often dangerous and can be illegal.
Above: This panoramic photo of a thunderstorm approaching Columbia is a combination of 14 separate photos.
COVER: The shut-ins at Johnson's Shut-Ins State Park, near Lesterville, are once again ready for visitors.
Cover photo by Scott Myers



Encounters With Nature

IN MISSOURI STATE PARKS

by Sue Holst
photographs by Scott Myers

In today's busy world filled with traffic, concrete and steel, Missouri state parks provide a window into an outdoor world filled with thick forests, rolling prairies and clear rivers and streams. These landscapes offer a backdrop for many activities such as hiking, swimming, fishing and just exploring nature.

"State parks are great places to enjoy with your friends and family and you can do so without spending a lot of money. One of the main reasons people want to come to state parks is to experience the outdoor world and everything that includes," said Dan Paige, acting director for the Missouri Department of Natural Resources' Division of State Parks.

"Nature is what often draws people to state parks, but sometimes visitors may not be aware of or totally understand the natural conditions that are a part of this outdoor world," said Fred Hicks, risk management coordinator for Missouri state parks.

Make sure your next visit to a state park, or any natural setting, is a positive one. The following information and suggestions are a good place to start.

Trail Use

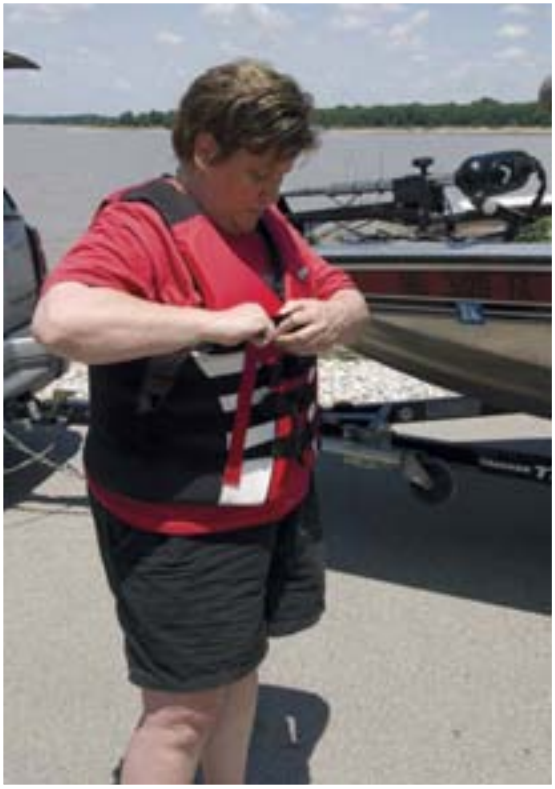
Missouri state parks offer a variety of trails for many different kinds of users and experiences. Trails have been developed for hiking, backpacking, bicycling, all-terrain vehicles and equestrian use. Hiking and bicycling are two of the most popular forms of trail use.

Part of the mission of the state park system is to preserve and interpret Missouri's most outstanding landscapes and provide recreational opportunities. To do this, undeveloped areas of state parks are kept as close to their natural state as possible. Recreational opportunities are developed or made available in ways that are compatible with those natural conditions. In an effort to bring nature close to the public, hiking trails may be developed on steep, rocky terrain or swimming areas available on wild and dynamic streams. State parks also provide areas where you can see wildlife in their natural settings.

Hiking

- Know your own capabilities. If you are not a frequent hiker, don't try to hike a long, strenuous trail. State parks offer many different trails that vary in length and terrain so try one that you may be more comfortable when hiking.
- When you plan a hike, let a friend, family member or staff at the park office know where you are going and when you will return.
- If you are not familiar with the trail, pick up a detailed map and make sure you are familiar with how to use it.
- Be aware of the weather that day and dress accordingly. Hypothermia can set

(Opposite page) Poison ivy can form a lush ground cover but avoid this plant whenever possible.
(Left) Knowing your bicycle and wearing a helmet can help ensure a safe trip. Oren Shapira, Israel, navigates a trail at Castlewood State Park.
(Above) Never swim alone or leave small children unsupervised near water. The Rae family, Festus, checks their safety equipment.



(Above) Wearing an approved personal flotation device is always recommended with water activities. Marybeth Bronsman, O'Fallon, makes sure the life jacket fits properly. (Right) Bicycle helmets are encouraged for everyone, even young riders on Katy Trail State Park. Alma Hopkins, Columbia, with children, Thomas and Merriam, check their equipment near Klondike.

in very quickly if you become cold and wet.
- Always carry water to ensure you stay properly hydrated. Also, carry food for added energy.
- Wear the proper footwear for the trail. Hiking boots are more appropriate for rugged and rocky trails and may help you avoid foot or ankle injuries.
- Carrying some form of communication, such as a cell phone, may be helpful but please note that there may not be coverage in all areas of the park.

Bicycling

- Make sure you are familiar with your bicycle. Once you are stranded on a trail, it is not a good time to realize you do not know how to fix simple problems with your bicycle.
- Know your own physical capabilities. "Sometimes, bicyclists believe they can go farther than they are capable of going safely. We always recommend that they work up to long trips. The result is usually more positive," said Dawn Fredrickson, assistant district supervisor for the Northern Parks District, which includes 225-mile-long Katy Trail State Park. "Many bicyclists believe the Katy Trail is easy to ride because it is level and they can misjudge their own capabilities, especially when it comes to distance," Fredrickson said.
- Always carry food and water, especially in the summer, to ensure that you do not become dehydrated.
- Always wear a helmet, even if the trail is smooth and flat.

Swimming

- Six state parks have swimming pools that are open to the public and have lifeguards available anytime they are open. Many other state parks have designated swimming areas at lakes that offer swimming beaches. Conditions in these areas are monitored but there are no lifeguards on duty. Signs are posted at these areas to let visitors know there are no lifeguards available. There are also other

non-designated areas in state parks where visitors access rivers or lakes at their own risk.

Anytime you enter the water, the following tips will help ensure a safe experience.

- Be aware of the lake or river's conditions. Rivers and lakes are dynamic and have natural conditions that cannot be controlled like those in a swimming pool. There may be swift currents, shifting stream bottoms or debris in the water you cannot see.
- Know your own physical capabilities. If you are not a good swimmer, do not try to swim across the lake or exceed your physical limitations.
- Always wear an approved personal flotation device.
- Never swim alone. Make sure someone is with you or knows where you are.
- Do not leave small children unsupervised near the water.
- Do not drink alcohol and swim.

Other Encounters with Nature

Wild animals such as skunks and raccoons are not pets and should be enjoyed from a distance. If encouraged, they may become unwelcome guests in your campsite. To guard against such unwelcome visitors, do not feed any wildlife. Put all trash in receptacles and keep all food locked in your car, camper or sturdy container.

Ticks can cling to your clothing when you walk through any type of vegetation. The likelihood of becoming sick is slim; however, several illnesses are linked to bacteria that can be transmitted by a tick. Precautions you can take against ticks include wearing light-colored clothing so they can be seen easily, wearing long pants tucked into boots or socks, and applying insect repellent to your shoes, socks, cuffs and pant legs. Remove ticks correctly as soon as you find them.

Poison ivy is a ropelike vine or standing plant that contains an oil that can be very irritating to the skin. Recognized by its "leaves of three," poison ivy is green in the summer and red in the fall. Limit exposure to the plant and wear long sleeves and pants.

The Department wants your experience in state parks to be a positive one. These simple suggestions can help ensure that it is a safe and enjoyable one for you and your family. Many state parks also offer other information about encountering nature. For more information about Missouri state parks and historic sites, visit the Web at [www.mostateparks.com].

Sue Holst is the information officer for the Department's Division of State Parks.

(Above) Sturdy footwear helps hiker Jeff Niblack, Kirkwood, travel the rugged terrain in Missouri State Parks.
(Above left) Many parks offer lifeguard-supervised swimming pools. Here the Washburn Church of Christ holds a pool party at Roaring River State Park.

WARM HOMECOMING

Missouri's Weatherization Program Invests in Real Life

by Kerry Cordray
photographs by Scott Myers

Terri Warren and her two children live in a little yellow frame house in Fayette, Mo. The Warrens began renting the home in 2006. As cooler fall weather set in during their first year there, it became evident to Warren that heating the place would be a challenge. "I knew that an older house can be drafty and hard to keep warm," Warren said. "But I knew how to make do." A single mom, Warren works the night shift in a local health care facility. Dealing with the natural gas bills was a monthly budget obstacle. When a really cold spell came along, they closed off the heating vents to her son's bedroom and slept in the same room.

After she had tolerated the situation for three winters, she saw a flyer in a local office about an assistance program that could make her house more comfortable and the utility bills easier to pay. She visited the Howard County office of Central Missouri Community Action to apply for the Low-Income Weatherization Assistance Program – the first step in a process that would bring the Warren family a warmer and safer house, lower utility bills and a more manageable family budget.

HISTORY OF SUCCESS

Many Missourians know the Low-Income Weatherization Assistance Program by the simpler name of "Weatherization." That nickname is commonly misunderstood. "People hear about 'weatherizing' a home, and they usually think of temporary fixes, like putting plastic sheets over windows," says Darin Preis, CMCA executive director. "The program is much more. It helps each assisted household achieve lasting cost savings by installing substantial energy-saving measures."

Administered by the Missouri Department of Natural Resources' Energy Center and implemented by 18 agencies throughout the state, the program provides services to income-eligible clients, as well as training and guidance in voluntary ways to keep energy costs down. The program was founded at the federal level in 1976. More than 155,000 Missouri homes have been weatherized since Missouri's program began in 1978.

The agencies provide weatherization services to Missouri residents with incomes at or below 200 percent of the federal poverty levels – especially the elderly, those physically disadvantaged and families with children. "More households became eligible with changes under the American Recovery and Reinvestment Act," says Preis. "For example, in 2008 a family of four needed an annual income of $31,800 or less to qualify for assistance. Under the new guidelines, a family of four making as much as $44,100 can now be eligible."

Primary funding for Missouri' s weatherization efforts comes from the U.S. Department of Energy. The funds are provided to local agencies by the Department's Energy Center according to federal guidelines. Through agreements made with the Energy Center in rate adjustment cases and other regulatory matters, some Missouri utility companies provide additional funding to weatherize more homes in their service areas. These utilities include AmerenUE, Aquila, Atmos Energy, Empire District Electric Company, Kansas City Power & Light Company, Laclede Gas Company and Missouri Gas Energy.

INVESTMENT IN RECOVERY

Under the Recovery Act, the federal investment in Missouri's weatherization program for the next three years will be substantially greater than annual funding in the past. During fiscal years 2007 through 2009, Missouri's annual funding was about $6 million per year. Funding under the Recovery Act over the next three years will total more than $128 million.

"Local agencies will be hiring and training workforces and buying vehicles, equipment and materials," said Department Director Mark Templeton. "Indirectly, weatherization funds are used and reused, stimulating the state' s businesses and economy, and creating jobs. Nationwide, weatherization reduces energy demand by the equivalent of 18 million barrels of oil each year. But the most critical benefit is direct – more homes will be weatherized and hundreds more low-income Missourians helped to afford their utilities for years to come."

HOME IMPROVEMENT

After CMCA found the Warren household financially eligible, an agency crew was sent to perform a thorough energy audit. Weatherization home audits are based on the newest principles of what energy efficiency experts call "building science." Testing of the home is technologically sophisticated, using computerized diagnostic equipment including a blower door, pressure gauges and infrared cameras to help the agency determine the most cost-effective energy-saving measures to use in each home. "Most clients are really sur-

(Opposite page) Terri Warren and her son Roby have a smaller stack of energy bills since their home was weatherized by Central Missouri Community Action of Howard County.
(Above and left) At another home, Toby Martin, with the CMCA crew, runs a blower door to check energy efficiency and leaks.

(Top) CMCA employee Ralph Walker checks an attic for proper insulation. (Above) Walker and Martin install a ceiling in a room that opened directly to the attic.

prised at how much technology is being used," said Judy Miller, an auditor/inspector with CMCA.

After the agency evaluated results of the Warrens' audit, it developed work plans and purchased materials, and in a few weeks a work crew from CMCA came back to the home. The crew sealed cracks that had allowed air to leak through the foundation, exterior walls and around windows and doors. Cellulose insulation was blown into the attic and walls, and additional fiberglass insulation was added to floors. "This home had almost no insulation," said CMCA's Miller. "One closet also had no ceiling, so one had to be built. It was like an open window into to the attic, letting all the heated air escape from the room." The crew also installed weather stripping and sweeps to all doors, and insulated the hot water heater with a fiberglass wrap. Ductwork was sealed and hot water pipes were wrapped with foam insulation.

Workers also added a combination carbon monoxide and smoke detector to a hallway at the Warrens' home. In addition to energy savings, ensuring the health and safety of residents is an important consideration in all weatherization projects. Other energy-efficient improvements made to client homes may include repair and replacement of ductwork, and cleaning, repair or even complete replacement of inefficient or unsafe furnaces and heating systems. Another benefit of increased funding under the Recovery Act will be an increased budget for the measures that may be installed in each home.

AFFORDABLE COMFORT

While the coming winter months will provide the real proof of how much Terri Warren's utility bills will be reduced, CMCA already knows that her savings during the heating season will be substantial. "We retested air infiltration with the blower door after the work was done, and saw that we achieved about a 40 percent reduction," said CMCA's chief auditor/inspector David Gregory. "After a project is complete, utility savings for the resident usually averages about 30 to 35 percent." Weatherization relieves low-income residents of the burden of high energy costs and helps many of them catch up on overdue bills." But Warren and her children feel an immediate and unmistakable improvement to the comfort of their home.

"Last summer and all the summers before, if we wanted to stay cool we had the air going constantly," Warren said. "I'd say the efficiency might be three times better than before. I'm almost looking forward to winter," she laughed.

Kerry Cordray is a division information officer with the Department's Office of Communications.

Johnson's Shut-Ins State Park

A New Beginning

by Sue Holst
photographs by Scott Myers

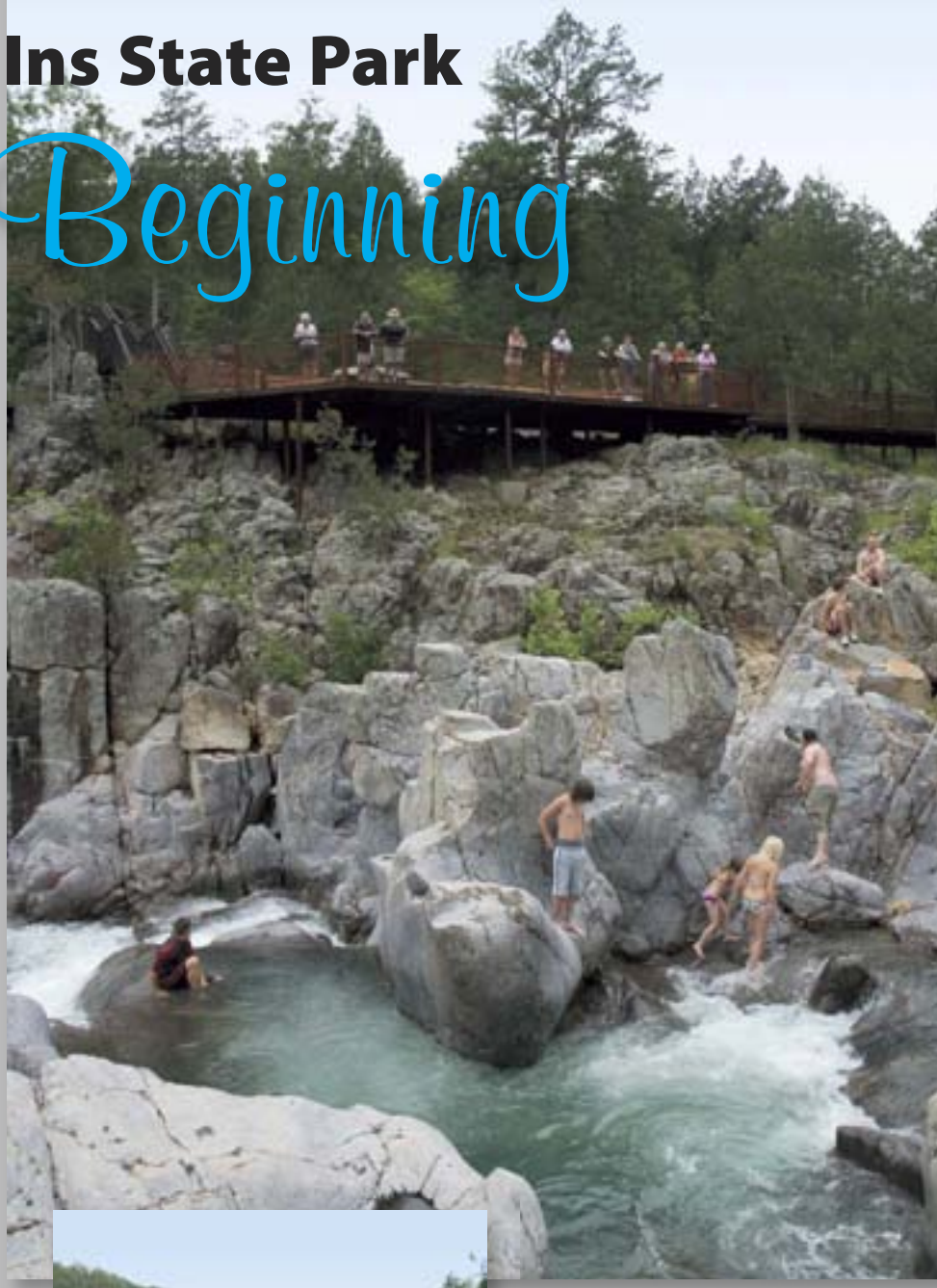
When visitors come to Johnson's Shut-Ins State Park today, they will experience some features that have been there for thousands of years, and some new features that have been created or developed within the last three years.

In December 2005, the AmerenUE Taum Sauk Reservoir on nearby Proffit Mountain breached, sending more than 1.3 billion gallons of water down the mountain and into the main use area of the park. The water, carrying tons of trees, debris and boulders, scoured the mountainside and swept through the valley of the East Fork of the Black River in the park. In its wake, it destroyed or extensively damaged facilities in the park, including the campground and the superintendent's residence. It also altered the landscape of the valley and damaged a sensitive natural community known as a fen.

After more than three years of environmental recovery, restoration and redevelopment, the Missouri Department of Natural Resources officially opened the main day-use area of the park on a permanent basis in the summer of 2009.

"I saw the park soon after the breach happened, and I was devastated to see all the damage," said Dan Paige, acting director of the Department's Division of State Parks. "I know a lot of us were wondering if it would ever be the same. What the park visitors see today is not the same, but we believe it still provides the quality experience that state park visitors have come to expect."

As visitors arrive at the park, the most obvious new facility is the Black River Center. The new center is designed to give visitors an overview of the park and its features along with information on the St. Francois Mountains and the surrounding area. Through interpretive exhibits, the center explains the natural, geologic and cultural history of the park, what happened



(Above) The shut-ins are the feature attraction at Johnson's Shut-Ins State Park. (Left) The Street family, Affton, discovers more wading opportunities in the reconstructed East Fork of the Black River.

(Top and opposite page) The waters of the East Fork of the Black River tumble through the rocky shut-ins at Johnson's Shut-Ins State Park. (Inset) Daryl and Lori Roth, Perryville, relax and enjoy a valley view from the overlook benches.

in 2005 and what the park offers today. The center also includes staff offices, a meeting room and a small retail space featuring park merchandise.

One attraction that has remained essentially unchanged is the park's namesake feature – the shut-ins. Although some boulders, sand and debris were washed into the shut-ins during the breach, this hard volcanic outcropping still provides a great place for swimming and splashing. Visitors can now access it from a new boardwalk, which also provides outstanding views of the shut-ins and the valley.

The breach altered the East Fork of the Black River, so the river was restored to address the environmental impacts of the breach and now flows like a natural meandering Ozark stream. This will help reduce the amount of sediment in the river. An added benefit of the restored river is the public now has easy access to the river for swimming, wading and fishing.

A great place to enjoy the river and relax is at the park's two picnic areas on the north and south ends of the day-use area. The picnic areas feature covered picnic shelters and single picnic pads for ample space to spread out a lunch with friends and family. A larger enclosed shelter is available for larger groups.

For those who forgot to bring a lunch or essentials, the park store has refreshments such as hot dogs, hamburgers and ice cream, as well as souvenirs, water shoes and other items.

The park features several trails for different experiences. The Black River Trail is the main pedestrian trail that winds through the valley of the park. Interpretive signs explain some of the features along the trail, such as the fen, a specialized wetland that is continuing to recover. Interpretive signage also is posted along the boulder field, which contains boulders that were carried by the water coming down Proffit Mountain. Interpretive pavilions have been built in the fen and boulder field areas.

A large scour channel was created as the water rushed down Proffit Mountain. The Scour Trail provides access to the scour channel and includes interpretation that explains the significance of the geology re-

vealed by the force of the water. The trail, which is accessed from Route N just east of the main park entrance, includes an overlook and interpretive pavilion. The new reroute of the Ozark Trail has been completed in this area so hikers on the Ozark Trail now have a view of the scour channel.

A new trail has been created leading from the Shut-Ins Trail into the East Fork Wild Area. The new Horseshoe Glade Trail takes visitors through a heavily wooded area to glade openings with scenic views of the valley. Goggins Mountain Equestrian Trail allows visitors to ride through the Goggins Mountain Wild Area and connects to the hiking-only portion of the Ozark Trail.

Before 2005, the campground had been located in the main valley of the park. The campground was destroyed by the reservoir breach and has been moved out of the valley into the Goggins Mountain area of the park. This allows for a more spacious campground setting and provides space for additional amenities that were not possible in the confines of the valley. The new campground features basic, electric, full-hookup, equestrian and walk-in campsites plus six camper cabins. For the convenience of campers, the campground also includes a store, shower houses and laundry facilities.

While enjoying the park, visitors can observe its continued healing and recovery. The Department of Natural Resources invites the public to once again take advantage of the outstanding features and settings of this park and the experiences available there.

For more information, call the Department of Natural Resources toll free at 800-334-6946 (voice) or 800-379-2419 (Telecommunications Device for the Deaf).

Sue Holst is the information officer for the Department's Division of State Parks.

(Below) Large boulders, reminders of the reservoir breach, are now among the park's interpretive features.

Managing Radionuclides

New Strategies Protect Drinking Water and District Budgets

by Susan Bloomer

Missourians expect and deserve safe drinking water. Ensuring that Missouri's 2,800 public water suppliers provide safe drinking water is one of the fundamental responsibilities of the Missouri Department of Natural Resources. But what is considered "safe" has changed over time, as science provides more information about the compounds found in drinking water and their effects on humans.

When science dictates changes are necessary, this can have big ramifications. Take radionuclides, which are naturally occurring radioactive elements found in some drinking water supplies. In 2000, the U.S. Environmental Protection Agency reduced the level of radionuclides considered to be safe in drinking water. These more stringent requirements became effective in Missouri on Dec. 8, 2003. So, the following day, many water systems were suddenly out of compliance.

The Department worked with these systems to find ways to bring them into compliance. But removing radionuclides is neither easy nor cheap. Expensive equipment must be engineered and installed. There are ongoing costs for operating and maintaining the equipment. Disposing of the radionuclide waste is even trickier, and costly. All of these costs must ultimately be paid by water system customers.

Some in the Department wondered if a different approach could be used. Department geologists theorized that specific geologic zones were probably contributing the radionuclides. If these zones could be located, perhaps they could be sealed off. This might simply eliminate the radionuclide problem.

Steve Sturgess, a geologist and chief of the Department's Public Drinking Water Branch, and Kenny Duzan, an environmental specialist with the branch, began discussing the idea with Peter Price, a geologist with the Department's Division of Geology and Land Survey. Price thought the idea made sense and began discussions with John Schumacher, a hydrologist with the U.S. Geological Survey. A project

Dan Mugel, U.S. Geological Survey, collects a water sample from Farmington well No. 12.

DNR photo by Tom Mesko

started taking shape. For the study, they selected two water systems with radionuclide compliance problems – the City of Farmington, located in the St. Francois Mountains region of southeast Missouri, and Boone County Public Water System District No. 9, located in central Missouri.

Both systems faced major costs to remove radionuclides, as well as waste disposal issues. Also, several other radionuclide violating systems are located in these areas. The Department hoped the information gained from these two systems might be applicable to other systems in their respective areas.

Officials from Farmington and Boone PWSD No. 9 were enthusiastic about the study. After all, they and their customers had a direct financial stake in the outcome. Their cooperation was crucial because it was necessary to take the wells off-line for several weeks. Timing was critical so as not to cause a service interruption for customers. Roger Ballew, manager of Boone No. 9 said, "We were happy to participate because we saw this as potentially having a big payoff for us."

Field work began in the summer of 2007, first in Farmington and later in Boone County. After the pumps were pulled from the wells, the geologists took a host of measurements using sensitive logging equipment. They then used packers – inflatable, balloon-like devices inserted into the well – to seal off one part of the well from another. This allowed discreet samples to be taken from different levels up and down the well. These samples were analyzed for radionuclides and other chemicals. The data were then compared with known information about the geologic formations intersected by the wells.

At Farmington, the geologists succeeded in locating the zones that were producing radionuclides. Unfortunately, those same zones generated the most water. Sealing off those zones would render the wells almost useless. At Boone No. 9, however, the radionuclide-producing zones were not the only water-producing horizons. The zones were at the bottom of the well, which meant that simply plugging the bottom of the well would potentially solve the problem. This information was provided to Ballew, who hired a contractor to put a plug in the bottom of the well.

To date, all water samples taken from Boone No. 9's well show it to be in compliance with the radionuclide standards. As a result, the system has canceled the equipment they were planning to purchase to remove the radionuclides, saving approximately $1 million and avoiding all the headaches associated with disposing of the waste.

Department staff are working to see if the results can be used at other water systems in the vicinity of Boone No. 9. The Department also is comparing the results of the money-saving study with radionuclide-violating systems in southwest Missouri.

The results of Missouri's radionuclides study were detailed at the annual meeting of the National Association of State Drinking Water Administrators. Subsequently, representatives from several states have made inquiries regarding our program in order to help them address this nationwide drinking water protection problem.

The new, lowered standards for radionuclides have made it difficult for some smaller communities to remain in compliance. Fortunately, many of the water systems that have had radionuclide violations in the past are coming into compliance through a variety of means, including installing new equipment, drilling new wells or blending their water sources. Some have opted out of the business by hooking into larger, regional water suppliers.

Several water districts and well drillers in Boone County and other parts of Missouri have used information from Boone No. 9 and Farmington to monitor new well construction and well rehabilitation.

Hopefully, these new strategies will prove useful in other districts. Remediating, rather than capping productive water sources, best serves the interest of water districts and their customers. The Public Drinking Water Branch has provided advice and testing services for those drillers and systems that have requested assistance.

If you have questions about radionuclides in your water supply, call the Department toll free at 800-361-4827 and ask for the Public Drinking Water Branch. The Department's Drinking Water Watch Web site, [www.dnr.mo.gov/env/wpp/dww/index.html] contains up-to-date information on sampling, compliance history and other information for every public water system in the state.

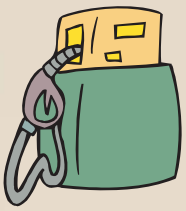
DNR photo by Scott Myers

The water tower at Boone County Public Water System District No. 9 serves the northern part of the county.

Susan Bloomer is a public information specialist with the Department's Water Protection Program, Public Drinking Water Branch.

News Briefs

Help Find Abandoned Underground Tanks



On downtown corners across Missouri, buildings stand vacant because often, abandoned underground petroleum storage tanks reside beside and below them. Before these properties may become useful again, they need to be assessed to determine the proper cleanup action.

The Department of Natural Resources will receive more than $3 million through the American Recovery and Reinvestment Act to address these problem properties. The Department will assess and clean up these abandoned underground petroleum storage tank sites, allowing the land to again become an economically viable and functional part of local communities.

The Department is asking Missouri communities to help identify abandoned underground petroleum storage tanks sites where there is not a clearly identifiable responsible party, often a former owner or operator. When selecting sites to benefit from the Recovery Act funds, the Department also will take into consideration the planned or potential future use for these sites. Where there is potential for reuse and redevelopment, including the creation of jobs, those will be given a higher priority than sites where there is not a redevelopment plan.

Abandoned underground storage tanks pose environmental threats and economic development barriers for the redevelopment and reuse of properties. Because of real or perceived contamination at these sites, developers, banks and other lending institutions are hesitant or unwilling to invest in the property.

Assessing and cleaning up the sites will not only provide economic stimulus to the consultants and subcontractors doing the physical tank work, but will have farther reaching and positive economic impacts.

To inform the Department of any sites that may need tank closure, assessment or cleanup activities, contact the Department's Tanks section at 800-361-4827 or 573-751-6822. You also can report a tank via e-mail at [tanks.stimulus@dnr.mo.gov].

New Marina Store at Long Branch SP

Visitors to Long Branch State Park near Macon will have a new facility to enhance their boating experience – a new marina store. The store, which opened in June, is located adjacent to the boat ramp and beach in the Bloomington area of the park on Long Branch Lake.

The store is a one-story 1,150-square-foot building that carries an assortment of convenience items along with fishing, camping and marina supplies and live bait. Snacks, ice cream and quick lunch items are available as well as soft drinks and a coffee bar. A deck with views of the lake is available for lounging or eating. The new store complements the existing 16-slip boat dock and fuel dock, and is operated by park staff.

The improvement is made possible by the department's one-tenth-of-one-percent sales tax and with the cooperation of the U.S. Army Corps of Engineers. In addition to the store and boat docks, Long Branch State Park offers boat ramps with access to the lake, a sand swimming beach, campground, picnic areas and a scenic trail around the lake.

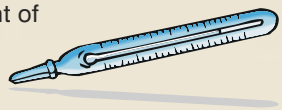
Earth Science Week: "Understanding Climate"

Climate is one of the most visible earth science topics in the news. Climate affects us today just as it has for millions of years. This is one of many reasons the Department of Natural Resources is partnering with the American Geological Institute and others to encourage stewardship of the Earth.

"Understanding Climate" was selected as the national and international theme of Earth Science Week 2009, October 11-17. For 10 years, the Department's Geology and Land Survey division has been the lead in marking the celebration. Division staff will work with teachers to encourage science literacy to benefit Missourians and encourage educators to highlight the earth sciences as a career choice for students as well as demonstrate the benefits earth sciences bring to the community.

To learn more about Earth Science Week and ways to become involved, including local events and classroom activities, please visit [www.dnr.mo.gov/geology/].

Mercury Roundup Nets Nearly 800 Devices



Department of Natural Resources collection sites throughout the state gathered nearly 800 mercury-containing instruments and 226 pounds of elemental mercury during the Department's mercury roundup effort.

Exposure to mercury can cause serious health problems, so the removal of mercury-containing instruments from homes decreases the likelihood of accidental mercury exposure.

The month-long roundup, held in cooperation with more than 90 local fire departments and county health offices, collected 509 thermometers, 34 medical devices, 252 switches.

The collected items were brought to Jefferson City, where they were sorted and prepared to be picked up by a state contractor. The mercury will either be recycled or disposed of in accordance with hazardous materials regulations.

Short-term exposure to high levels of mercury vapors may cause lung

damage, nausea, vomiting, diarrhea, as well as increases in blood pressure or heart rate, skin rashes and eye irritation.

Symptoms from chronic or long-term exposure can develop in just a few weeks. Tremors, decreased eye-hand coordination, memory problems, insomnia and irritability can develop quickly. If these symptoms are not correctly identified and exposure is not prevented, permanent nervous system damage can occur.

Anyone who has large quantities of mercury and may have missed the roundup can contact the Department's spill line at 573-634-2436 to arrange to have items picked up. The spill line is also available if you have questions concerning cleaning up a mercury spill at home or work.

Bioreactor Landfill Receives Approval

Department of Natural Resources' Solid Waste Management Program has issued permits to the city of Columbia to operate Missouri's first bioreactor landfill. The bioreactor is part of an existing landfill, located north of the city, off of Route B, in Boone County.

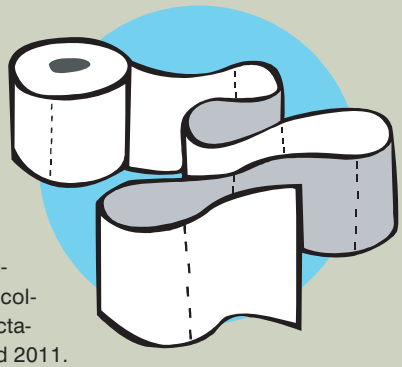
The facility will allow Missouri to gather information on the benefits of a bioreactor landfill over the traditional landfill. As part of the approval, the facility is required to complete additional monitoring and testing and must submit an annual report.

A bioreactor landfill accelerates the decomposition and stabilization of waste through the controlled addition of liquids to the waste mass. The decomposition of organic material generates carbon dioxide and methane gases, known as greenhouse gases. The city will use the collected methane as fuel to generate electricity at the facility.

The U.S. Environmental Protection Agency has revised the criteria for municipal solid waste landfills to allow states to issue research, development and demonstration permits for new

environmental notes

Soft For Us, Tough For Trees



It is never enough to only recycle materials. The recycling symbol, circling arrows labeled "reduce, reuse, recycle," is a closed loop. The key to successful recycling efforts, closing the loop, is the purchase and use of products made from recycled materials.

While economic declines have reduced the demand for recycled material by producers, the recycling industry has continued to collect and store these materials with the expectation that this market will improve in 2010 and 2011.

The American Forest and Paper Association recently reported a third year of increasing used paper recovery. In 2008, a record 57.4 percent paper recovery rate was reported, up from 56 percent in 2007 and 53.4 percent in 2006. The increases are due to more paper being recycled, but also less paper being used nationwide. The AFPA had set a recovery goal of 55 percent by 2012, but have since raised the bar to 60 percent by the same year – providing that the economy cooperates.

One way consumers can save money and save trees during the economic downturn is by using more recycled-content toilet paper. But people who buy toilet tissue for their homes – even those who think of themselves as concerned about the environment – are resistant to toilet tissue made from recycled paper. In 2008, ultra soft tissue manufacturers increased sales by 40 percent in some markets, according to Information Resources Inc., a marketing research firm.

Surprisingly, in the United States, the largest worldwide market for toilet paper, tissue from 100 percent recycled fibers makes up less than two percent of sales for at-home use among conventional and premium brands. In Europe and Latin America, products with recycled content make up, on average, 20 percent of the residential market, according to experts at the Kimberly-Clark corporation.

However, fluffiness has a price. Toilet tissue can be made at similar cost from recycled material, but the softer stuff requires longer fibers from standing trees. Most large manufacturers rely on those fibers. Therefore, millions of trees harvested in North America and in Latin American countries, including a percentage of trees from rare old-growth forests in Canada, are used for toilet paper. According to RISI, an independent market analysis firm in Bedford, Mass., the pulp from one eucalyptus tree, a commonly used tree, produces as many as 1,000 rolls of toilet tissue. Americans use an average of 23.6 rolls per capita a year.

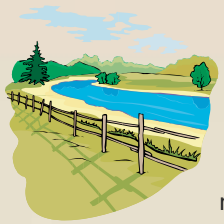
While brands may differ, 25 percent to 50 percent of the pulp used to make toilet paper in the U.S. comes from tree farms in South America and the United States. The rest, according to environmental groups, comes from old, second-growth forests. Those trees serve as important absorbers of carbon dioxide, the heat-trapping gas linked to global climate change.

Environmentalists also note that turning a tree to paper requires more water than turning paper back into fiber, and many brands that use tree pulp use polluting, chlorine-based bleach for whiteness. Tissue made from recycled paper should carry the PCF – processed chlorine free – label.

"No forest of any kind should be used to make toilet paper," says Dr. Allen Hershkowitz, a scientist and waste expert with the Natural Resource Defense Council.

and existing landfill units and lateral expansions. Missouri received approval to implement this rule Jan.16, 2007. The research, development and demonstration rule allows a three year approval with up to four extensions for a total of 12 years.

Water Grant for Mound Branch



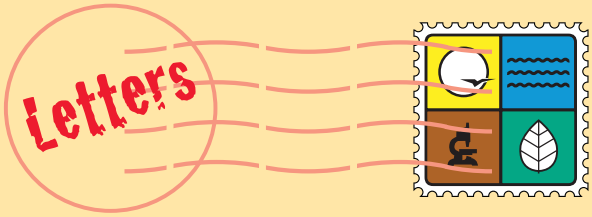
Gov. Jay Nixon announced the Department of Natural Resources has awarded a $1.16 million grant to the Osage Valley Resource Conservation & Development Council in Clinton for the Mound Branch Watershed Evaluation and Restoration Project. This project will improve water quality and aquatic habitat in Mound Branch, near Butler in Bates County, by increasing dissolved oxygen and reducing ammonia and sediment. During tough economic times, this infusion of grant funding will help the council protect citizens and the environment by improving water quality.

The grant will provide training and workshops for local agricultural producers and landowners to learn about best management practices and their effectiveness in reducing pollutants flowing into Mound Branch.

A project plan will be developed for monitoring water quality at nine sites within Mound Branch and its tributaries. Water quality parameters to be monitored include dissolved oxygen, ammonia, total suspended solids, total nitrogen, total phosphorus, pH, temperature, specific conductivity, optical brighteners and flow.

The Osage Valley Resource Conservation & Development Council and its partners will provide a matching contribution of $771,335 during the life of the project bringing the total cost to $1.93 million.

A Citizens Watershed Committee was formed to assume local leadership responsibilities and assist with



It is rather confusing. We have been told that mercury tooth fillings are safe. Some fillings contain 50 percent mercury. Your article in the Spring/Summer '09 issue by Larry Archer is interesting, yet it leaves us wondering how safe mercury is in the mouth. Are the experts reconsidering the safety?

Jonathan W. Yoder
Windsor

Editor's Note:

According to the American Dental Association: "Dental amalgam is a stable alloy made by combining elemental mercury, silver, tin, copper and possibly other metallic elements. Although dental amalgam continues to be a safe, commonly used restorative material, some concern has been raised because of its mercury content. However, the mercury in amalgam combines with other metals to render it stable and safe for use in filling teeth.

"Major U.S. and international scientific and health bodies, including the National Institute of Health, the U.S. Public Health Service, the Centers for Disease Control and Prevention, the Food and Drug Administration and the World Health Organization, among others, have been satisfied that dental amalgam is a safe, reliable and effective restorative material."

This is in response to the *Missouri Resources* Spring/Summer 2009 Leave No Trace article. I receive this wonderful magazine at home and after reading the article, I felt that some clarification of the 4-H program would benefit your readers. 4-H is not recognizable to many, many Missourians. The University of Missouri, MU Extension, Youth Development Program (4-H) has taught leadership, citizenship, life skills, agriculture, nutrition and health, environmental stewardship and technology to young people across the state for more than 100 years. The 4-H Youth Development Program reaches over 100,000 youth in Missouri and is composed of 4-H Clubs, Community Youth Development, special interest programs and school programs.

You can find more information at [www.mo4h.missouri.edu].

Michael G. Hoffmeyer
4-H Youth Development Educator
Farmington

In your Spring/Summer 2009 issue, received recently, I noted a photo of a blast furnace, built in 1857 at the Maramec Iron Works near St. James. This really caught my eye as my great grandfather, Ambrose Zimmerman, came to Missouri from Kentucky by way of Ross County, Ohio, to work at the Maramec Iron Ore Works as a stonemason in the early 1840s.

His name is on a ledger sheet from the facility dated 1 October 1845, and also on a receipt signed by him dated 13 March, 1855. The originals are on file with the Western Historical Manuscripts Collection at the University of Missouri, Columbia.

So this picture had special meaning to me. I enjoy your magazine.

Bessie M. (Zimmerman) Hume
Branson

Letters intended for publication should be addressed to "Letters," *Missouri Resources,* PO Box 176, Jefferson City, MO 65102-0176 or faxed to (573) 522-6262, attention: "Letters." Please include your name, address and daytime phone number. Space may require us to edit your letter. You also can e-mail *Missouri Resources* staff at [moresdnr@dnr.mo.gov].

the project. The committee, with assistance from technical advisors, will use watershed modeling and water quality trend data to modify project activities on an annual basis.

U.S. Environmental Protection Agency Region 7, through the Department of Natural Resources, has provided funding for these projects under Section 319 of the Clean Water Act. These grants will be administered by the Department's Water Protection Program. The Department is committed to working closely with communities and businesses to assist with funding efforts that improve water quality in Missouri.

Rocky Lunch for Missouri Travelers

Tasty treats are on display at the Rolla Visitor Center, I-44 Exit 184 and the St. James Visitor Center, off I-44 at Exit 195. However, if you stop by, you will soon realize you are in for an experience you will not forget.

The "food," known as the "Geoburger Special," was prepared by the Department of Natural Resources' Division of Geology and Land Survey. The fare is made entirely of rocks and minerals. The char-broiled hamburger on display is actually coal. The toasted bun is chert. The piping hot French fries are limestone. The cool, refreshing-looking vanilla-caramel ice cream is chert; the ice is a mix of halite and calcite. You also can feast your eyes on grapes made of ore. The cheese wedge and fresh bread are sandstone. The apple slice is barite and the stemmed glass is filled with ice made of halite and calcite.

There is more to whet the appetite at the Department's Ed Clark Museum of Missouri Geology at the DGLS offices at 111 Fairgrounds Road, Rolla. A menagerie of native rocks and minerals, along with geologic maps, a mastodon tusk, and a short-faced bear make their home in the museum.

Established in 2005, the museum is named for Ed Clark, the 13th state geologist who served from 1944-1955. The site is visited annually by hundreds of young people, members of the academic community, researchers and citizens from across the world. The museum was funded entirely through donations to serve as an educational facility.

Stream Team Notebook

Loving Labarque Creek – Stream Team 2991

Bob Coffing has brought Stream Team 2991 a long way since it was formed in 2006. What started as one man with a passion for protecting the 8,400-acre Labarque Creek watershed has now grown to a 170 member team – half of them Coffing recruited by himself.

DNR photo by Susan J. Higgins

Claire Meyners, left, and Bob Coffing prepare to do biological sampling on Labarque Creek. She has the rack and he holds the net – standard equipment for stream monitors.

Coffing moved to the Labarque Creek area in 1978 and began exploring the area by hiking through it with his son. At the time, he still traveled extensively with his career and had little time to take on a new project. When he retired, he saw an advertisement for a tour guide at Shaw Nature Reserve. While conducting tours, Coffing became very interested in water quality issues and was inspired to start the Friends of Labarque Creek Watershed Association.

In 2006, Coffing formed Stream Team 2991 and took all the Volunteer Water Quality Monitoring Workshops, becoming a Level II monitor within the first year. He then recruited his friend and neighbor, Claire Meyners, who also became involved with the Volunteer Water Quality Monitoring program. Now, Coffing and Meyners have identified nine monitoring sites that they believe are critical to the health of the watershed. Coffing also has arranged "Walk and Talk" sessions within the Labarque Creek area so interested citizens can join an expert as they walk along the creek and learn about topics that affect the watershed. So far, he has arranged programs on geology, stream ecology, and botany, to name a few.

When asked about their favorite aspect of the Stream Team Volunteer Water Quality Monitoring program, Meyners said, "I love to get outdoors in the stream and do something that I know has a purpose." Coffing added that he loves to see the enthusiasm new recruits have when they become involved with the program. No matter how you look at it, this "dynamic duo" is making a difference in the Labarque Creek watershed.

MISSOURI STREAM TEAM

Time Exposures

Photo by Dennis Bresnahan

The University City Parks Department ran a four-week summer camp at the Pa He Tsi Group Camp at the Lake of the Ozarks State Park from 1967 to 1970. The camp was later moved to the larger Camp Hawthorn until the summer camp program ceased operations in 1975.

At the camp in 1969 were Joe Stone, at left, with guitar, swimming and water area activities counselor, Alvin Walker, athletics counselor and Calvin Lee, a boys' counselor. Dennis Bresnahan, who provided this photo, was on the Camp Pa He Tsi staff in 1969 and 1970. All four were 17 to 18 years old at the time.

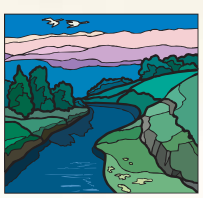
The group camp buildings were constructed by the Civilian Conservation Corps in the 1930s, used by the Boy Scouts in the 1940s and '50s, but torn down in the late 1970s. The park area and a boat ramp retain the Pa He Tsi name.

Campers were age six to 12. Boys attended for the first two weeks and girls for the second two weeks.

Send your photo to "Time Exposures," c/o Missouri Resources, PO Box 176, Jefferson City, MO 65102-0176. All pictures will be returned via insured mail. Pre-1970 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.

Books and posters about geology and related topics are available for purchase at the maps and publications counter. When you visit, bring your own "solid food" so a Department geologist can identify your rock or mineral. Additional information is online at [www.dnr.mo.gov/geology/].

James River Gets $600,000 Grant



Gov. Jay Nixon announced the Missouri Department of Natural Resources has awarded the James River Basin Partnership a $600,000 grant to preserve and protect the river's riparian corridor. The James River Basin Partnership will provide a contribution of $400,020 over the life of the project bringing the total cost of the project to more than $1 million. During tough economic times, this infusion of grant funding will help protect citizens and the environment by preserving and protecting the James River in southwest Missouri.

The grant will help fund the James River Riparian Corridor Restoration and Protection project, targeting areas along the James River and its tributaries that have an inadequate riparian corridor. This project will implement measures to help restore the corridor to its natural state while offering protection practices through establishing conservation easements. A riparian corridor is an area of land adjacent to a water body. Often vegetated, it provides a buffer between the land and the water. By re-establishing the riparian vegetation, the partnership hopes to improve the natural ecological functions of the river corridor, which includes protecting the stream from nonpoint source pollution runoff.

In 2001, the Department completed a Total Maximum Daily Load, or TMDL, for the James River to address the impaired section of the river. A TMDL is a study of the impaired water that provides a background of the water and establishes the maximum amount of a pollutant the water can absorb before its quality is affected. The TMDL can be viewed on the Department's Web site at [www.dnr.mo.gov/env/wpp/tmdl/2347-2362-2365-james-r-tmdl.pdf].

For news releases on the Web, visit [www.dnr.mo.gov/newsrel/index.html]. For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at [www.dnr.mo.gov/calendar/search.do].

Ben Datema **Empowering Ingenuity**

DNR photo by Scott Myers

Ben Datema

University of Missouri student Ben Datema was in the mood for a little friendly competition. With the latest in technology and good, old-fashioned ingenuity, Datema leveraged that competitive spirit into a hands-on lesson on energy conservation for students in several residence halls at MU.

Through his work on sustainability issues at the university, Datema learned of a program called Building Dashboard that enables building residents to monitor their energy usage online. Datema pitched the idea to the MU Information Technology Committee. The committee was so impressed by Datema's proposal that they awarded the student a grant from the Interdisciplinary Innovations Fund to purchase and install the program in MU's Hatch, Schurz and College Avenue residence halls. Datema demonstrated to members of the committee that this was a great way to meet their needs for a project that crossed disciplines, made innovative use of technology and affected students.

"My general approach is to try to see what the mutually beneficial aspects of any project are," Datema said, "to make sure that all parties benefit and get what they need."

In addition to securing the grant, Datema serves as project coordinator. He credits much of this project's success to Residential Life, which has helped with many aspects of the project, particularly marketing it to students. Frankie D. Minor, director of Residential Life, said they were eager to support a project that encouraged energy efficiency. Schurz measured a 3.4 percent energy reduction during the competition, College Avenue measured a 3 percent reduction and Hatch measured a 1.1 percent reduction. The university is considering expanding the program to other residence halls as well.

"We're excited about the possibilities this will offer and hope that students embrace it, and use the information to form good, lifelong sustainable practices," Minor said. "We also give most of the credit for making this happen to Ben. A lot of people had to come together to make it work, but he was the inspiration and the driving force."

Datema first found inspiration during his days at Kickapoo High School in Springfield, where biology teacher Justine Lines taught him about the impact he could have on environmental issues by taking positive action.

Datema shared this inspiration with others by helping to found the Kickapoo High School Environmental Club. Datema will be working as an undergraduate assistant in the Mizzou Sustainability Office that's being formed with funding from a newly passed $1 per student/per semester sustainability fee. Datema plans to graduate in 2010 with a degree in biology, a minor in business and an environmental studies certificate.

"I hope that students become more interested in energy conservation and more educated about how they can save energy in everyday life," Datema said. "We want to empower students to make a difference with everyday behavior change."

John Roth **Ozark Trail Champion**

OTA file photo

John Roth

The Ozark Trail, a 350-mile long trail traversing southeast Missouri from St. Louis to near Arkansas, has a 30-year history of trail advocates championing its development. Most of these advocates have been members of state and federal agencies managing land through which the trail runs. One of its staunchest champions, however, was a man with no government affiliation. John Roth, founder of the Ozark Trail Association, was simply a hiker who wanted to better the trail and dreamed of the day when it would rival the Appalachian Trail in popularity.

A frequent trail user, Roth often disapproved of the conditions of the Ozark Trail. After one hike in particular, Roth contacted the U.S. Forest Service to complain of downed trees and overgrown weeds. Invited by the Forest Service to assist in trail improvements, Roth showed up the following day, embarking on his 13-year career as one of the trail's most committed volunteers.

Wanting to see the Ozark Trail completed, Roth pursued the idea of establishing the Ozark Trail Association (OTA), a not-for-profit volunteer organization that would assist with the development, maintenance and promotion of the Ozark Trail. Roth presented his idea to the Ozark Trail Council, an entity composed of public land agencies and trail user groups and responsible for establishing guidelines for managing the trail. The council agreed with his concept of a volunteer organization dedicated solely to the Ozark Trail.

An entrepreneur who had already founded a successful computer consulting firm, Roth was no stranger to the occasionally frustrating process of establishing an organization "from scratch," but was persistent in his efforts. From a grassroots organization of only 27 members when it was established in 2002, in 2008 the OTA saw more than 500 of its volunteers participate in 150 work events and donate more than 15,000 hours in trail maintenance and construction work. The OTA eventually became the chair of the Ozark Trail Council.

Many of the OTA work events occurred at Johnson's Shut-Ins State Park where the Taum Sauk Section of the Ozark Trail is located. "John Roth and the OTA have been indispensable in our efforts to clean up and rebuild this section of trail," said Dan Paige, acting director for the Missouri Department of Natural Resources' Division of State Parks.

Tragedy occurred in July 2009 when Roth was killed in an accident at his farm near Steelville. Roth's death has robbed the Ozark Trail of one of its most devoted supporters.

"John's passion, energy, persistence and commitment to the trail will be sorely missed," said Kelley Brent, the Division of State Parks' trail coordinator.

Despite his death, the Ozark Trail Association, Roth's most enduring legacy, will continue to work toward fulfilling Roth's dream of completing the Ozark Trail to the Arkansas border.

Long Branch State Park

by Jennifer Sieg

(Above) Long Branch Lake, in north-central Missouri, has three boat launch areas.

Picture bountiful water recreation in a beautiful, rural setting. Subtract the usual crowded tourist component, and you have Long Branch State Park. The gently rolling hills and farmland in northern Missouri provide a scenic backdrop and enhance the peaceful and expansive view of Long Branch Lake, which borders the park. Miles of shoreline are dotted with quiet coves. The park's three areas all include lake access and offer a glimpse of the natural features that lured settlers to the area.

Before the lake was developed, early settlers were attracted by the streams and rivers that carved through the woodlands in the area. The woodlands were populated with hollow trees, which provided homes to honeybees. A trail through the woods became known as the Bee Trace. To retrieve the honey, settlers began chopping the trees, destroying the tree and its colony of bees. Today, bee trees are scarce but portions of the Bee Trace area are preserved in the park.

Other remnants of the area's original plants and animals are also preserved in the park. Woodlands of post oak, black oak and shagbark can be found along the flat ridge tops, while the slopes and creek bottoms support white oak, bur oak, sycamore and silver maple. Where these forests blend into the prairie areas, native prairie plants flourish. More than half of northern Missouri was once covered with native prairie.

Today, a trail winds through a 160-acre area being restored with colorful native prairie grasses and plants such as little bluestem, big bluestem, Indian grass, wild indigo and sensitive brier. Wildlife that call this forest-prairie region home include white-tailed deer, wild turkey, bobwhite quail, red-tailed hawk, raccoon, red fox and more. Bald eagles are often seen on Long Branch Lake throughout the winter months.

The most popular feature of the park, however, wasn't here when the early settlers arrived. Long Branch Lake was created in 1979 when the U.S. Army Corps of Engi-

DNR photo by Scott Myers

neers built a dam on the Little Chariton River to control flooding and create recreation opportunities. Just as the streams and rivers attracted the early settlers, the lake now draws people to the area. With its excellent reputation for bass fishing, anglers come to cast their lines in one of the many small, peaceful coves. It is also possible to reel in catfish, walleye and crappie. With 24 miles of shoreline, it is easy to find a secluded spot on land to sit and fish. The park boasts a partially covered, accessible fishing dock.

Boating and swimming are also popular activities on the lake. Launch your boat for a day of fun on the water from one of three paved boat ramps in the park. There are no launch fees or horsepower restrictions for boats on the lake. New in 2009 is the Long Branch Marina Store, which carries an assortment of convenience items along with fishing, camping, marina supplies and boat fuel. Snacks, ice cream and quick lunch items are available, as well as soft drinks and a coffee bar. A deck with views of the lake can be used for lounging or eating.

If you would rather stay ashore and play in the water, head to the park's sand swimming beach. Splash in the water or take in a game of sand volleyball. A change house is available for your convenience. Bring along a picnic lunch and spend the day next to the lake. Picnic tables scattered under trees and along the lake offer a quiet setting for lunch and a scenic view

You can also plan your next family reunion or get-together with friends at the park. Two picnic shelters are available to rent or can be used free of charge on a first-come, first-served basis if not reserved. Both shelters are equipped with electricity, picnic tables and an outdoor grill. Water and restroom facilities are nearby. Near one of the shelters is a playground, as well as a

(Top) A family takes to the water on Long Branch Lake. (Below) Long Branch State Park provides shady camp sites for recreational vehicle owners seeking electric hookups and more secluded, walk-in sites for tent campers.

DNR photo by Scott Myers

DNR photo by Scott Myers

(Right) Brad Yotty and Amanda McDonald, Macon, walk their dog on a trail near Long Branch Lake. (Below) The new park store offers a panoramic view of the lake as well as supplies for outdoor adventures.

1.5-mile trail that leads to the lake, where benches await, providing a great spot to sit and watch the day go by.

DNR photo by Scott Myers

Turn your visit into a multi-day vacation with a stay in the wooded campground. Bordering the prairie grasses and the lake are 83 campsites, with 64 offering 50-amp electrical hookups for those preferring some of the luxuries of home. If you would rather tent camp nestled in the woods, you can carry your camping gear into one of nine walk-in campsites near the lake and be secluded from the rest of the world. Four campsites are accessible to people with disabilities. Hot showers, modern restrooms, a dump station, ice, a playground and firewood are available. To make your camping reservations, call toll free at 877-422-6766 or go online at [www.mostateparks.com]. Some sites are available on a first-come, first-served basis.

The park also features a special-use area available for use by organized youth groups. This area offers space to set up tents and includes picnic tables, water, fire rings and a vault toilet. To reserve this area for your group, contact the park office.

If you enjoy water recreation and spending time outdoors but don't like the atmosphere of crowded tourist areas, Long Branch State Park may just be the perfect vacation destination for you and your family or friends.

Long Branch State Park is conveniently located just two miles west of the U.S. 63 and U.S. 36 junction near Macon in Macon County. For more information, contact Long Branch State Park at 660-773-5229 or the Department of Natural Resources toll free at 800-334-6946 (voice) or 800-379-2419 (Telecommunications Device for the Deaf) or visit the Web at [www.mostateparks.com/longbranch.htm].

Jennifer Sieg is an information specialist with the Department of Natural Resources' Division of State Parks.

DNR photo by Dustin Webb

Charlie DuCharme

A Watershed of Challenges

by Kerry Cordray
photographs by Scott Myers

Charlie DuCharme studies water. Sounds simple, right? As a hydrologist for the Missouri Department of Natural Resources' Water Resources Center, DuCharme's job is so complex and interesting, it's hard to describe quickly.

A hydrologist is a scientist that studies the movement, distribution and circulation of water, on and below the surface of the earth and in the atmosphere. The Department employs 11 hydrologists, all in the Water Resources Center, an office that helps communities and public agencies by providing technical assistance through water resource monitoring and planning.

After earning a forestry degree and working as a forester in Colorado, DuCharme became more interested in the effects of water on his work.

"As I learned about the importance of water in forests, I became fascinated with the universal importance of water resources in everything we do, and also how everything we do affects the resource," DuCharme said. "The availability and movement of water affects everything, from determining whether a plant species may grow in a wetland to whether a surface water body or underground aquifer will provide enough for a whole region to drink."

His interests led him to earn another degree from Colorado State University, this time a Bachelor of Science in watershed science, and to work in 1989 as an environ-

Charles DuCharme uses a sonar device to measure water velocity and estimate the amount of water flowing in a central Missouri stream.

DuCharme examines the geographic distribution of stream gauges in Missouri while considering potential locations for new monitoring sites.

mental specialist in the department's Water Protection Program. Later that year, DuCharme was among the first to be hired when the new job classification for hydrologists was developed by DNR.

Data and study by DuCharme and others in the Water Resources Center often supports work throughout other parts of the Department. One recent example is DuCharme's work on the Taum Sauk Water Management Team, a group of experts working to restore the East Fork of the Black River as close as possible to its natural condition before the 2005 catastrophic breach of the Taum Sauk Reservoir. Another example was DuCharme's study to estimate how high and how often the Mississippi River would flood Edward "Ted" and Pat Jones-Confluence Point State Park.

"Park designers and managers needed to understand

"The availability and movement of water affects everything, from determining whether a plant species may grow in a wetland to whether a surface water body or underground acquifer will provide enough … to drink." – Charlie DuCharme, DNR hydrologist

and try to predict floodwater levels and the timing and duration of those levels so wetlands could be managed for certain animals and plants that depend on fluctuating river levels," DuCharme said.

Hydrologic data becomes especially important when an area's water resources present a challenge because of either flooding or drought. DuCharme maintains and produces a monthly map of Missouri rainfall data using records from a USDA rain gauge network. DuCharme's study also helps the Water Resources Center decide where to locate additional instruments for Missouri's growing network of stream gauges, providing real-time stream-flow data and adding to the body of historical knowledge on Missouri streams.

General qualifications for an entry-level position as a hydrologist require graduation from a college or university with a bachelor's degree in hydrology, engineering, geology, water resources or closely related areas, with at least six semester hours in hydrology, hydrogeology or closely related subjects.

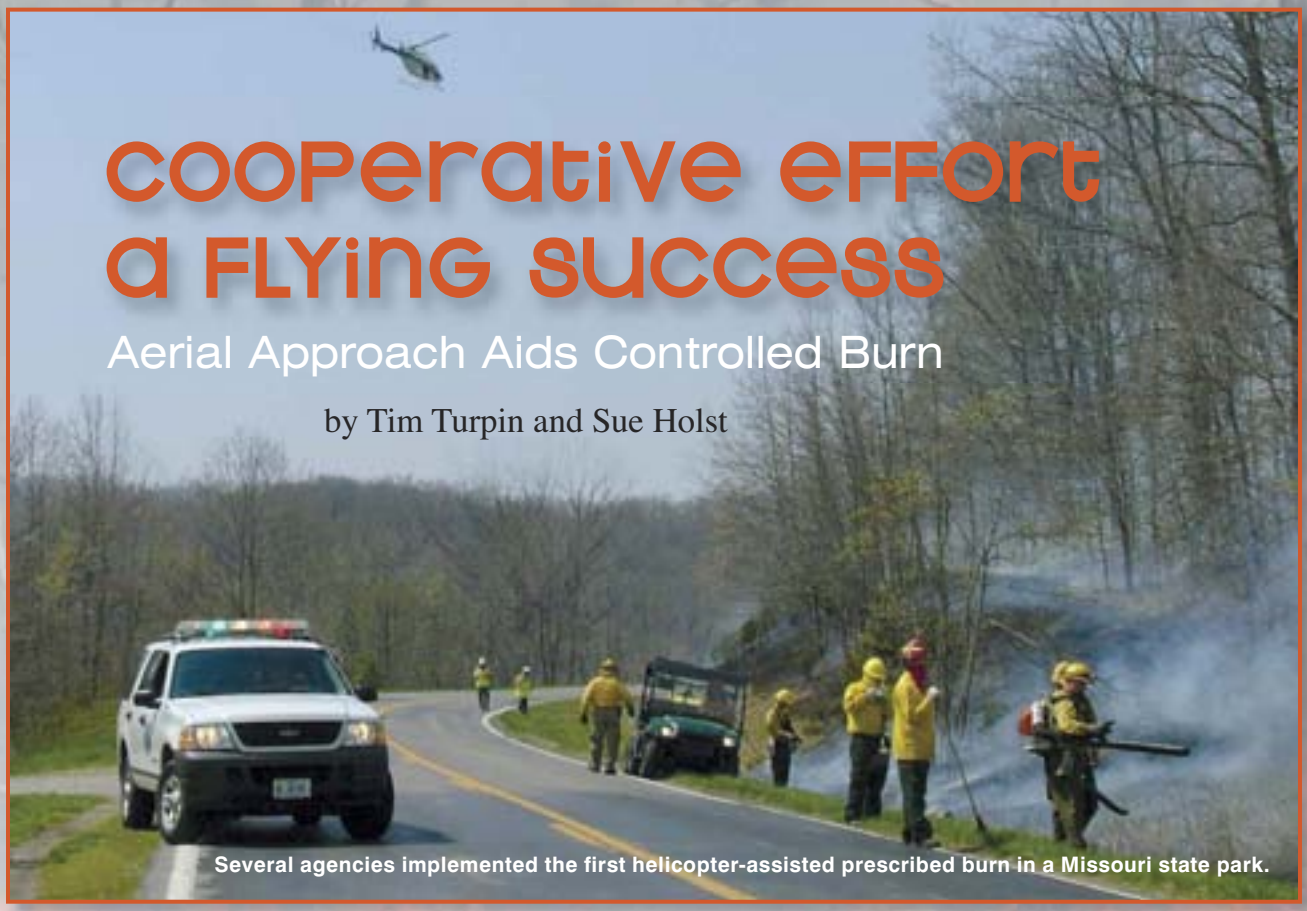
For more information, call the Department at 800-361-4827 and ask for the Human Resources Program.

Kerry Cordray is a division information officer with the Department of Natural Resources' Office of Communications.

Cooperative Effort a Flying Success

Aerial Approach Aids Controlled Burn

by Tim Turpin and Sue Holst



Several agencies implemented the first helicopter-assisted prescribed burn in a Missouri state park.

MDC photo by Scott Kelley

A helicopter and the cooperation of three resource agencies resulted in the success of the largest and most complex prescribed fire in Missouri state park history at Trail of Tears State Park in April 2009.

Prescribed fires have been used by Missouri Department of Natural Resources staff for many years as an effective method of ecological management and restoration in state parks. This is routinely performed with staff on the ground, igniting and controlling the fires.

In the rugged terrain of Trail of Tears State Park in southeast Missouri, wind and ice storms had created heavy woody debris in the interior of the park, making it difficult to establish fire lines for a safe and effective burn. The solution was to request assistance from the U.S. Forest Service to ignite the burn from the air. The USFS routinely uses helicopters to ignite prescribed burns on its land but this was the first time a helicopter had been used on a burn in a Missouri state park. Chemical-filled ping pong balls are dropped from the helicopter and a chemical reaction makes them ignite at calculated times.

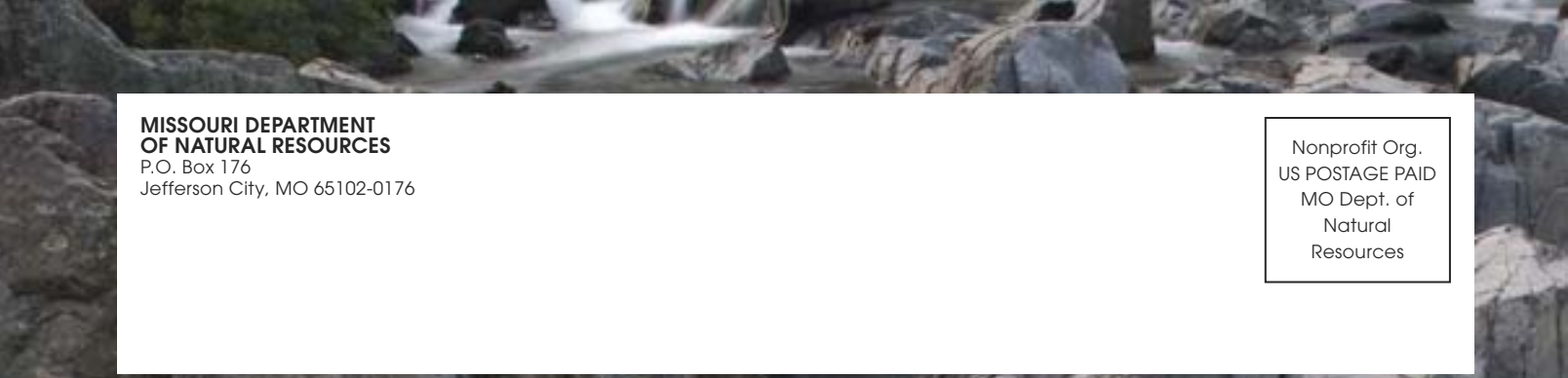
Mass ignition allows large tracts of land to be ignited quickly, helps with smoke dispersal and keeps personnel out of the area during a burn, increasing safety.

Planning began months in advance of the actual prescribed burn, which involved more than 1,300 acres. In addition to the USFS, the Missouri Department of Conservation assisted DNR with the burn.

When any prescribed burn is performed, many conditions, including weather, must be ideal. These conditions all occurred in April 2009, so DNR scheduled a prescribed fire. On the day of the burn, more than 50 staff trained in fire management from all three agencies assisted. Once safety checks were made and small test fires conducted, the helicopter began dropping the spheres to ignite the interior. In a very short time, the helicopter's ignitions were completed and the crews on the ground completed the work around the interior.

Because of experience, planning and cooperation among all three agencies, the prescribed fire was completed effectively and safely.

Tim Turpin is a natural resource steward with the Department's Division of State Parks. Sue Holst is information officer for the division.



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